

Appl. No. 09/302,409

REMARKS

Claims 4-36 and 38-43 are in the instant application; no claims are allowed.

Claim 24 is objected to because of the alleged following informality: In line 22 should "-" be --±--? Applicants respectfully traverse the objection to claim 24 and request reconsideration thereof. In line 22, the range is recited as "18-31Å" and is correct as presented. If the range were presented as "±", the recitation would be "24.5 ± 6.5Å". Applicants having the option, elected to present the range as "18-31Å".

Based on the above, applicants respectfully request withdrawal of the objection to claim 24.

Claims 12, 15, 18, 22 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. The Office Action alleges that it is not clear what the dielectric film of the dielectric layer comprises. The Office Action notes that the claims state "dielectric layer comprises a zinc oxide film; a zinc oxide, tin oxide film or a zinc stannate film..." and inquires if the film is a zinc oxide film or if the film is a tin oxide or zinc stannate film. The Office Action directs applicants to MPEP 2173.06(h) for proper Markush language.

Applicants respectfully traverse the rejection of claims 12, 15, 18, 22 and 28 under 35 U.S.C. 112, second paragraph; however to reduce the issues, claims 12, 15, 18 and 22 are amended to present a feature of the invention in Markush language. Claim 28 recites the film as a film selected from a group of named films. Claim 28 was further amended to more positively recite the invention (see below discussion regarding amendment to claim 28). Support for the amendments to claims 12, 15, 18, 22 and 28 is found, among other places, in the originally filed claims and in the specification. Based on the above, applicants respectfully request admittance of the amendments to claims 12, 15, 18, 22 and 28, and withdrawal of the rejection of claims 12, 15, 18, 22 and 28 under 35 U.S.C. 112, second paragraph.

Appl. No. 09/302,409

Claims 4, 7, 9, 25, 28 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Depauw et al. (GB 2,311,540A) (hereinafter "Depauw"). The Office Action alleges that Depauw teaches a coated sheet for use in a laminated assembly including a transparent substrate carrying two metal layers formed of silver and three layers of a transparent dielectric material; that the dielectric material includes oxides such as tin oxide, zinc oxide, silicon nitride, or a mixture thereof or a complex of zinc stannate, and that each dielectric layer can include more than one of these materials and each layer can be a composite layer formed of successive subsidiary layers of different compositions. The Office Action continues by alleging that combination of tin oxide and zinc oxide is generally advantageous, whether in admixture or in successive sub-layers; that the coated substrate also has a thin layer of a sacrificial metal, such as titanium, provided above and in contact with each metal (silver) layer and that Table A shows the successive layers (films) which may be used in forming the dielectric layers of the laminate.

Applicants respectfully traverse the rejection of claims 4, 7, 9, 25, 28 and 31 under 35 U.S.C. 102(b) as being anticipated by Depauw and request reconsideration thereof. Claims 7 and 9 are dependent on independent claim 4; claims 25, 28 and 31 are independent claims. Claims 4, 25, 28 and 31 are amended in one form or another to recite, among other things, that the dielectric layer has, among other things, a plurality of films of which one of the films is selected from the group of a tin oxide, zinc oxide film and a second zinc stannate film. The claims further recite that the tin oxide, zinc oxide film has a weight percent of tin in the range of greater than 0 and less than 10 with the majority of the remainder being zinc and/or zinc in the range of less than 100 and equal to or greater than 90 with the majority of the remaining tin. Support for the amendments to claims 4, 25, 28 and 31 is found, among other places, on page 6, lines 1-10, and page 8, lines 1-20, of the specification.

Claims 4, 25, 28 and 31 have not been amended to add limitations, but are amended to recite the definition of "tin oxide,

Appl. No. 09/302,409

zinc oxide film" given in the specification and to more positively recite the group of films.

Applicants respectfully submit that there is no teaching in Depauw of a tin oxide, zinc oxide film as recited in claims 4, 25, 28 and 31 nor of tin zinc stannate films as recited in claims 4, 25, 28 and 31 having different compositions.

Based on the foregoing, applicants respectfully request admittance of the amendments to claims 4, 25, 28 and 31, and consideration of, and withdrawal of the rejection of claims 4, 7, 9, 25, 28 and 31 under 35 U.S.C. 102(b).

Claims 5, 6 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Depauw. The Office Action alleges that Depauw teaches a coated substrate as discussed above and discloses that the successive layers or films which make up the three dielectric layers of the laminate may include tin oxide, zinc oxide, and zinc stannate, and that Depauw further teaches that it is advantageous to use a mixed oxide of tin and zinc. The Office Action continues by stating that Depauw does not give specific examples wherein a zinc stannate is next to a mixed oxide of tin and zinc and that absent a showing of criticality; however, the Office Action alleges that since Depauw clearly teaches that these materials may be used in making the successive layers, it would have been obvious to one of ordinary skill in the art at the time of the invention to use these materials in succession.

Claims 5, 6 and 38 are dependent on claim 4.

Applicants have shown supra that there is no disclosure in Depauw of a dielectric layer including a second dielectric film of tin oxide, zinc oxide (having the composition recited in the claim) and/or zinc stannate. The advantages of a zinc oxide tin oxide film are discussed on page 8, lines 1-20, of the specification.

Because there is no disclosure in Depauw of the features recited in claim 4, there is no disclosure in Depauw of the features recited in claims 5, 6 and 38.

Appl. No. 09/302,409

Based on the foregoing, applicants respectfully requests withdrawal of the rejection of claims 5, 6 and 38 under 35 U.S.C. 103(a).

Claims 8, 10-24, 26, 27, 29, 30, 32-36 and 39-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Depauw in view of Gillery US 4,610,771 (hereinafter "Gillery"). The Office Action alleges that Depauw discloses a coated sheet as discussed above but does not teach a preferred zinc/tin ratio; that Gillery teaches a film composition comprising multiple layers, preferably a highly reflective film such as gold, silver and copper sandwiched between metal oxide layers. The Office Action continues by alleging that the anti-reflection layer comprises a metal oxide, which is preferably zinc stannate and that the zinc stannate film has a composition of preferably 10-90 percent zinc and 90-10 percent tin, where a zinc/tin ratio from 40:60 to 60:40 is preferred. The Office Action further alleges that at the time the invention was made it would have been obvious to one of ordinary skill in the art to use the zinc stannate composition of Gillery in the laminate of Depauw et al. to produce a laminate with higher transmittance.

The Office Action continues by stating that Depauw also does not disclose the exact thickness ranges for the layers and alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the thickness of the ranges to achieve the desired transmittance, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involved only routine skill in the art. (*In re Aller*, 105 USPQ 233).

Applicants respectfully traverse the rejection of claims 8, 10-24, 26, 27, 29, 30, 32-36 and 39-43 under 35 U.S.C. 103(a) and request reconsideration thereof. Claims 8, 10-24 and 39-43 are dependent on claim 4; claims 26 and 27 are dependent on claim 25; claims 29 and 30 are dependent on claim 28 and claims 32-36 are dependent on claim 31.

Claims 4, 25, 28 and 31 and Depauw were discussed above. Applicants for the sake of discussion only acknowledge that Gillery

Appl. No. 09/302,409

discloses a zinc stannate film similar to the one disclosed and claimed by applicants.

Applicants respectfully submit that an artisan combining Depauw and Gillery would replace one of the films of Depauw with the film of Gillery. This combination of Depauw and Gillery would not disclose applicants' invention of a dielectric layer having two layers, one of which is a tin oxide, zinc oxide film. The specific combination of films as recited in the claims is not disclosed in Depauw and/or Gillery. More particularly, there is no disclosure in the combination of Depauw and Gillery of a first dielectric film over a second dielectric film when the second dielectric film is tin oxide, zinc oxide film or zinc stannate as recited in the claims.

Based on the above, applicants respectfully request withdrawal of the rejection of claims 8, 10-24, 26, 27, 29, 30, 32-36 and 39-43 under 35 U.S.C. 103(a) and request allowance of claims 4-36 and 38-43.

Applicants by this amendment have added claims 44-50. Claims 44 and 45 are dependent on claim 4; claims 46-50 are dependent on claims 7, 9, 25, 28 and 31 respectively.

Support for claims 44-50 is found, among other places, in the originally filed claims and the specification. The arguments to patentably distinguish claims 4-36 and 38-43 over the art is applicable to patentably distinguish claims 44-50 over similar art.

Based on the above, applicants respectfully request admittance, consideration and allowance of claims 44-50.

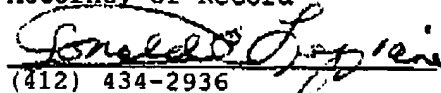
This amendment represents a sincere effort to place the application in condition for allowance. In the event issues remain, the Examiner is invited to call the undersigned to discuss those issues before further action is taken on the case.

Appl. No. 09/302,409

Attached hereto is a marked-up version of the amendments to the claims made by the instant amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE".

Respectfully submitted,

DONALD C. LEPIANE
Registration No. 25,996
Attorney of Record


(412) 434-2936

Pittsburgh, Pennsylvania
November 29, 2001

Appl. No. 09/302,409

VERSION WITH MARKINGS TO SHOW CHANGES MADEIN THE CLAIMS

Claims 4, 12, 15, 18, 22, 25, 28 and 31 have been amended as follows:

4. (twice amended) An infrared reflective coated article comprising:

a substrate;

a dielectric layer defined as a first dielectric layer sputter deposited over the substrate, the first dielectric layer comprising:

~~a~~ first dielectric film comprising at least one film selected from the group ~~consisting of~~ zinc oxide film, silicon oxide film, tin oxide film, silicon nitride film, silicon oxynitrate film and zinc stannate film, wherein the zinc stannate ~~having~~ film has zinc in weight percent range of equal to and greater than 10 and equal to and less than 90, and tin in the weight percent range of equal to and less than 90 and equal to and greater than 10, ~~wherein and~~ the zinc stannate film of the first dielectric layer is defined as a first zinc stannate film, and

~~a second dielectric film an electrical enhancing film deposited over the first dielectric film, the electrical enhancing second dielectric film comprising at least one film selected from the group of films consisting of zinc oxide, tin oxide film wherein the zinc oxide, tin oxide film has tin in the weight percent range of greater than 0 and less than 10 and the majority of the balance zinc and a second zinc stannate film wherein the composition of the first second zinc stannate film is has zinc in the weight percent range of equal to and greater than 10 and equal to and less than 90 and tin in the weight percent range of equal to and less than 90 and equal to and greater than 10 and wherein when the~~

Appl. No. 09/302,409

dielectric layer has first and second dielectric zinc stannate films, the composition of the first zinc stannate film is at least about 5 weight percent different than the composition of the second zinc stannate film, and
an infrared reflective layer deposited on the first dielectric layer.

12. (twice amended) The coated article of claim 40 wherein the first dielectric film of the second dielectric layer is selected from the group of films consisting essentially of ~~comprises~~ a zinc oxide film; a zinc oxide, tin oxide film ~~or~~ and a zinc stannate film defined as a second zinc stannate film, the second zinc stannate film of the second dielectric layer having a composition different than the composition of the first zinc stannate film of the second dielectric layer.

15. (amended) The article of claim 14 wherein the first dielectric film of the third dielectric layer is selected from the group consisting essentially of a zinc oxide film; a zinc oxide, tin oxide film ~~or~~ and a zinc stannate film defined as a second zinc stannate film, the second zinc stannate film of the first dielectric film of the third dielectric layer having a composition different than the composition of the first zinc stannate film of third dielectric layer.

18. (twice amended) The coated article of claim 17 wherein the first dielectric film of the second dielectric layer and the first dielectric film of the third dielectric layer each has a film selected from the group consisting essentially of zinc oxide film; zinc oxide, tin oxide film and second zinc stannate film ~~having wherein the second zinc stannate film of the first dielectric film of the first dielectric layer and the second zinc stannate film of the first dielectric film of the third dielectric layer has a~~ composition different than the composition of the first zinc

Appl. No. 09/302,409

stannate film in the respective same second or third dielectric layer.

22. (twice amended) The coated article of claim 18 wherein the second dielectric film of the second dielectric layer and the second dielectric film of the third dielectric layer each has a film selected from the group consisting essentially of ~~comprises~~ a zinc oxide film; a zinc oxide, tin oxide film ~~or and a second zinc stannate film defined as a second zinc stannate film wherein the first and second zinc stannate films in the same dielectric layer have different compositions~~ ~~film having a composition different than the composition of the first zinc stannate film of third dielectric layer.~~

25. (twice amended) A coated article comprising:
a substrate;
a first dielectric layer over the substrate;
a first infrared reflective layer over the first dielectric layer;
a first metal primer layer over the first infrared reflective layer;
a second dielectric layer over the first metal primer, the second dielectric layer having a first dielectric film comprising at least one film selected from the group consisting of zinc oxide, tin oxide film wherein the zinc oxide, tin oxide film has zinc in the weight percent range of equal to or greater than 90 and less than 100 and the majority of the balance tin and a first zinc stannate film, and a second dielectric film the second dielectric film having a composition different than the first dielectric film of the second dielectric layer;
a second infrared reflective layer over the second dielectric layer;
a second primer layer over the second reflective layer;
a third dielectric layer over the second metal primer layer; and

Appl. No. 09/302,409

optionally a protective layer overlying the third dielectric layer.

28. (twice amended) A coated article comprising:
a substrate;
a first dielectric layer over the substrate;
a first infrared reflective layer over the first dielectric layer;
a first metal primer layer over the first infrared reflective layer;
a second dielectric layer over the first metal primer layer;
a second infrared reflective layer over the second dielectric layer;
a second metal primer layer over the second reflective metal layer;
a third dielectric layer having a first dielectric film comprising at least one film selected from the group consisting of zinc oxide film; zinc oxide, tin oxide film wherein the zinc oxide, tin oxide film has either tin in the weight percent range of greater than 0 and less than 10 and the majority of the balance zinc or zinc in the weight percent range of equal to or greater than 90 and less than 100 and the majority of the balance tin and a first zinc stannate film and a second dielectric film overlying the first dielectric film, the second dielectric film having a composition different from the first dielectric film; and
optionally a protective film overlying the third dielectric layer.

31. (amended) A coated article comprising:
a substrate;
a first dielectric layer over the substrate;
a first infrared reflective layer over the first dielectric layer;
a first primer layer over the first reflective metal layer;

Appl. No. 09/302,409

a second dielectric layer having a first dielectric film comprising at least one film selected from the group consisting of zinc oxide, tin oxide film and a first zinc stannate film, and a second dielectric film overlying the first dielectric film having a composition different than the first dielectric film of the second dielectric layer;

a second infrared reflective layer over the second dielectric layer;

a second primer layer over the second reflective layer;

a third dielectric layer over the second metal primer layer, the third dielectric layer having a first dielectric film comprising at least one film selected from the group consisting of a zinc oxide, tin oxide film and a first zinc stannate film and a second dielectric film, the second dielectric film of the third dielectric layer have a composition different than the composition of the second dielectric film of the third dielectric layer wherein the zinc oxide, tin oxide film of the first dielectric film of the second dielectric layer and of the first dielectric film of the third dielectric layer is selected from the group consisting of tin in the weight percent range of greater than 0 and less than 10 and the majority of the balance zinc, zinc in the weight percent range of less than 100 and equal to and greater than 90 and the majority of the balance tin and mixtures thereof; and

optionally a protective film overlying the third dielectric layer.

Please add new claims 44-50 as follows:

44. The coated article of claim 4 wherein the second dielectric film is an electrical enhancing film.

45. The coated article of claim 4 wherein the composition of the second zinc stannate film is zinc in the range of 60 to 90 weight percent and tin in the range of 10 to 40 weight percent.

Appl. No. 09/302,409

46. The coated article of claim 7 where in the composition of the second zinc stannate film is zinc in the range of 60 to 90 weight percent and tin in the range of 10 to 40 weight percent.

47. The coated article of claim 9 wherein the composition of the second zinc stannate film is zinc in the range of 60 to 90 weight percent and tin in the range of 10 to 40 weight percent.

48. The coated article of claim 25 wherein the composition of the second zinc stannate film is zinc in the range of 60 to 90 weight percent and tin in the range of 10 to 40 weight percent.

49. The coated article of claim 28 wherein the composition of the second zinc stannate film is zinc in the range of 60 to 90 weight percent and tin in the range of 10 to 40 weight percent.

50. The coated article of claim 31 wherein the composition of the second zinc stannate film is zinc in the range of 60 to 90 weight percent and tin in the range of 10 to 40 weight percent.